

Digest  
#01

October 2023

ResilienTogether is one of 25 Flood and Coastal Innovation Programme (FCRIP) projects funded by DEFRA, with an aim to demonstrate how practical innovative actions can work to improve resilience to flooding and coastal erosion.

These digests summarise learning gained while delivering outcomes under ResilienTogether. Captured through research and practical application, this learning is recorded to inform and guide other water management schemes and organisations across the country.

## Stormwater sensing technologies

A comparison of two leading stormwater level sensing technologies



Figure 1. Rugged TROLL 200



Figure 2. Elsys ELT-2-i

## ResilienTogether

ResilienTogether is creating a Smart Catchment using innovations in technology and practices to reduce flood risk, enhance the water environment and improve community resilience in the Pix Brook catchment in the face of climate change.

## What have we learnt?

This digest draws from the University of Exeter's Smart Stormwater Management Review, completed for ResilienTogether and compares leading stormwater sensing technologies. Stormwater sensors are devices capable of monitoring and transmitting environmental parameters such as water level, velocity and flow within a stormwater system. These parameters require different sensors including quantity sensors, proxy sensors and direct sensors. There are a range of product types offering complete package solutions, open source solutions and 'mix and match' products. The level sensors described below provide comparable data using different kit specifications.

### Rugged TROLL 200 Data Logger & VuLink

- Level sensor, providing water level, pressure and temperature, and telemetry device (Figure 1).
- Sensing technology: Pressure sensor
- Telemetry technology: 4G LTE CAT M1 / NB IoT. Backwards compatibility with 2G
- Data and access: Historical data stored + Access via web portal or API
- Unit cost: £460 for logger, £615 (+£24 for antenna) for telemetry device\*
- Subscription cost: £16-£27/month, depending on reading and transmission frequency\*

### Elsys ELT 2 i Maxbotix Ultrasonic

- Integrated level sensor and LoRaWAN transmitter. Provides water level, temperature, humidity and orientation (Figure 2).
- Sensing technology: Ultrasonic
- Telemetry technology: LoRaWAN
- Data and access: N/A
- Unit cost: £210\*
- Subscription cost: N/A
- Additional requirements and dependencies: LoRaWAN gateway for onward data transmission (only one for all sensors in range) + Data management and access

Advantages	Disadvantages
Advertised two year / 2M reading battery life for logger; Geo-Environmental estimate ~8 year battery life	Logger batteries cannot be recharged or replaced
Sensor accuracy 0.05% FS, resolution 0.01% FS	Easy Win installations indicate advertised telemetry battery life is optimistic
Advertised two year battery life at 15 minute reporting intervals for telemetry device	No external power supply option
Simple setup	High unit cost, with one required per location

Advantages	Disadvantages
Advertised battery life up to 10 years	Ultrasonic sensor requires unhindered path to water surface
Configured via NFC from android phone	
Sensor range 300 to 5000mm	

If you want to find out more about this topic, please get in touch with us at [ResilienTogether.project@Centralbedfordshire.gov.uk](mailto:ResilienTogether.project@Centralbedfordshire.gov.uk)

\*As of June 2022, costs are estimates only